CLAIMS:

1. Circuit for providing power to a load with a pre-determined specification, comprising:
- a transformer having a primary winding and a secondary winding, said secondary winding being part of a resonant circuit;
- first and second load connection nodes for coupling of the load in series to the secondary winding;
- a switch coupled in series to the primary winding, an on and off-time of the switch being controllable by a control element, for generating a voltage pulse over the primary winding;
characterized in that a diode is coupled in parallel to the primary winding for demagnetizing the transformer during the off-time of the switch, the on and off-time of the switch being predetermined.

2. Circuit according to claim 1, characterized in that a capacitor is added in parallel to the secondary winding for adjusting the resonance period of the resonant circuit.

3. Circuit according to either of the preceding claims, characterized in that the transformer has a couple factor which is smaller than one.

4. Circuit according to any of the preceding claims, wherein a control element is added to control the switch, characterized in that the control element is selected to cause the on-time of the switch to be at least half of the resonance frequency.

5. Circuit according to any of the preceding claims, wherein a control element is added to control the switch, characterized in that the control element is selected to cause the off-time of the switch to be sufficient to reduce the current in the diode to substantially zero during demagnetization of the transformer.

6. Circuit according to any of the preceding claims, characterized in that a resistor is connected in series to the diode to reduce the necessary switch off-time.

7. Method for providing power to a load, comprising the steps of:
-applying a number of voltage pulses to a primary winding of a transformer so as to produce each time a high-voltage pulse on the secondary winding thereof, which pulse is shaped by the transformer inductances and capacitances at the secondary side to create a load pulse;
- applying the load pulse to the load;
characterized in that between every application of a voltage pulse a current path for the primary current is provided so that the transformer is demagnetized and saturation of the transformer is prevented.

8. Method according to claim 7, wherein the load is a high-intensity discharge lamp, characterized in that a first series of pulses is applied to ignite said lamp, whereupon a second series of pulses is applied to operate the lamp during the electrode heating phase of said lamp.

9. Method for optimizing the parameters of the circuit according to any of the claims 1-6, characterized in that
- the maximum oscillation period of the resonant circuit is determined on the basis of the maximum value of the capacitance at the secondary side when a load is connected;
- the on-time of the switch is chosen to be higher that half of said oscillation period.

10. Method for optimizing the parameters of the circuit according to any of the claims 1-6, characterized in that the off-time of the switch is chosen to be higher than the time necessary to reduce the current through the diode to substantially zero.

11. Method for optimizing the parameters of the circuit according to any of the claims 1-6, characterized in that the mean value of the short-circuit current over the on and off-time of the switch is calculated for a range of couple factors, whereupon the couple factor for which this value is minimal is selected.